

Q' 90. The system of Claim 89 wherein said routing of bursty data received from the computer network at the hub to one or more of said plurality of sector antennas is determined as a function of the content of the received bursty data.

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#### REMARKS

With respect to the claims to be added, all of the elements in each claim may be found in the specification. Applicant has referred to the location in the application for the various features included in the newly submitted claims so that the examiner may verify that no new matter has been added. Applicant makes such brief referrals below, with the understanding that not every occurrence of a particular feature in the specification need be, or has been, referenced below and that the examiner will not be limited in his analysis to the portions of the specification referenced, but will independently verify that the specification supports the features claimed. It is also understood that the shorthand references adopted for convenience are only for the purpose of directing the attention of the examiner to the application and are not to be used in the interpretation of actual claim language.

All of the independent - and dependent - claims being added by this preliminary amendment are directed to a communications system which is (a) broadband, (b) point (hub) to multipoint (plurality of nodes), (c) millimeter wave, (d) where the hub has plural directional antennas, (e) where the nodes have a directional antenna and (f) operable on at least one frequency. This combination of elements will hereinafter be referenced in this preliminary amendment as the "System." Support for each of these elements,

individually and collectively, are readily found throughout the specification and drawings.

New independent Claim 38 recites the System and adds:

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 25-27, pg 42, ll. 1-2;

short distance – pg 11, ll. 1-2;

bursty data between computer systems – pg 9, ll. 6-12;

plural hub transceivers – pg 13, ll. 5-11; Fig. 2B;

processor including CPU and modem – Fig. 2C;

determines routing – pg 16, ll. 26-28; pg 17, ll. 1-2;

senses parameter of link – pg 31, ll. 20-27;

dynamically varying power or data density as function of parameter –pf 30,  
ll. 13-22;

provides sync signals to nodes – pg 16, ll. 26-28; pg 32, ll. 4-20;

nodes connected to computer networks separate from hub computer network – pg  
5, ll. 1-3;

transceiver –pf 27, ll. 1-5;

antenna highly directional toward hub –pg 26, ll. 27-28;

processor including CPU and modem – Fig. 4;

varying forward/reverse ratio as function of hub signals – pg 32, ll.

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Claim 39:

routing data at hub as function of content of data received – pg 26, ll. 4-6.

Claim 40:

data contains address –pg 26, ll. 1-6;

hub processor responsive to address for routing – pg 26, ll. 4-6.

Claim 41:

frequency 20-43 GHz –pg 6, ll. 3-6.

Claim 42:

processor includes buffer and means for varying data density – pg 18, ll. 15-16; pg 13, ll. 13-15.

Claim 43:

data density varied as function of distance or parameter – pg 33, ll. 18-20; pg 33, ll. 25 to pg 34, ll. 6.

Claim 44:

data density variable in different time slots – pg 42, ll. 19-27.

Claim 45:

hub varies data density as function of distance – pg 33, ll. 26 to pg 34, ll. 6.

Claim 46:

hub antenna beam width 16 degrees – pg 12, ll. 22-28.

Claim 47:

hub antenna beam width at least 16 degrees – pg 12, ll. 22-28 .

Claim 48:

node antenna beam 2 degrees in azimuth and elevation – pg 26, ll. 27-28.

Claim 49:

node antenna is dish – pg 26, ll. 27 to pg 27, ll. 4.

Claim 50:

hub antenna beam width at least 16 degrees – pg 12, ll. 22-28;

node antenna beam 2 degrees – pg 26, ll. 27-28.

Claim 51:

ratio of hub/antenna beam width is 8 – pg 12, ll. 22-28; pg 26, ll. 27-28.

Claim 52:

parameter is node/system bandwidth ratio – pg 33, ll. 2-12; pg 38, ll. 14-22.

Claim 53:

transceiver bandwidth 10 MHz – pg 23, ll. 18-20.

Claim 54:

transceiver bandwidth at least 10 MHz – pg 23, ll. 18-20.

New independent Claim 55 recites the System and adds:

ATDD – pg 41, ll. 25-27;

short distance – pg 11, ll. 1-2;

bursty data between computer systems – pg 9, ll. 6-12;

plural hub transceivers – pg 13, ll. 5-10; Fig. 2B;

processor including CPU and modem – Fig. 2C;

determines routing to antenna – pg 16, ll. 27 to pg 17, ll. 4;

vary forward/reverse ratio – pg 41, ll. 25 to pg 43, ll. 23;

provides sync signals to nodes – pg 16, ll. 26-28; pg 15, ll. 14-20;

nodes connected to computer networks separate from hub computer network – pg 5, ll. 1-2;

antenna highly directional toward hub – pg 26, ll. 25-28;

processor including CPU and modem – Fig. 4;

varying forward/reverse ratio as function of hub signals – pg 32, ll. 3-10;.

Claim 56:

routing data at hub as function of content of data received – pg 26, ll. 4-6;

Claim 57:

forward/reverse ratio varied as function of processor monitored bandwidth utilization – pg 38, ll. 14-22; pg 41 ll. 25 to pg 43, ll. 23.

Claim 58:

continuous monitoring of bandwidth utilization – pg 38, ll. 14-22; pg 41 ll. 25 to pg 43, ll. 23.

Claim 59:

bandwidth utilization statistically determined – pg 36, ll. 20-24.

Claim 60:

forward/reverse ration dynamically configurable – pg 41, ll. 25 to pg 43, ll. 23.

Claim 61:

hub processor varies density of data passed to hub computer as instructed by hub computer – pg 24, ll. 18-24; pg 25 ll. 28 to pg 26, ll. 26; pg 27, ll. 18 to pg 28 ll. 6.

Claim 62:

data in cells in slots in frames with data density of payload and info cells independently variable – pg 23, ll. 8 to pg 24 ll. 2.

New independent Claim 63 recites the System and adds:

ATDD – pg 41, ll. 25-27;

fixed frame – pg 39, ll. 23-26; pg 43, ll. 8-12;

hub with modem and plural antennas – Fig. 2C;

node antenna highly directional – pg 26, ll. 25-28;

dynamically variable forward/reverse portions of frame – pg 41 ll. 25 to pg 43 ll. 23;

data density dynamically variable within frame – pg 36, ll. 2-15.

Claim 64:

dynamic assignment of modems to antennas – pg 16, ll. 26 to pg 18, ll. 25.

Claim 65:

forward data density independent of reverse data density – pg 36, ll. 2-15; col. 41, ll. 1-9.

Claim 66:

plural slots forward and reverse – pg 23, ll. 18-27;

data density variable by slot – pg 36, ll. 2-15; pg 41, ll. 1-9

Claim 67:

dynamic varying data density as function of monitored parameter – pg 33, ll. 18-20; pg 36, ll. 2-15;

Claim 68:

parameter is signal error rate/S/N ratio; signal/interference ratio, signal power level or signal propagation delay – pg 33, ll. 18-28;

Claim 69:

data density variable as function of distance – pg 33, ll. 18-28.

Claim 70:

hub antenna assignment function of monitored bandwidth – pg 36, ll. 20 to pg 37, ll. 19.

Claim 71:

bandwidth utilization continuously monitored – pg 36, ll. 20 to pg 37, ll. 19.

Claim 72:

bandwidth utilization statistically monitored – pg 36, ll. 20 to pg 37, ll. 19.

New independent Claim 73 recites the System and adds:

ATDD – pg 41, ll 25-27;

at least one hub – Fig. 6;

dish node antenna – pg 26, ll. 27 to page 28, ll. 6;

frequency 10-60 GHz – pg 5, ll. 3-4;

bandwidth at least 10 GHz – pg 23, ll. 18-20;

hub/node antenna beam width ratio is at least 8 – pg 12, ll. 22-28; pg 26, ll. 27-28.

Claim 74:

bandwidth is 50 MHz – pg 21, ll. 26-28;

Claim 75:

frequency is 38 GHz – pg 10, ll. 19-23;

New independent Claim 76 recites the System and adds:

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

plural hub transceivers – pg 13, ll. 4-7; Fig. 2B;

non-overlapping sectors – pg 14, ll. 17-28;

processor including CPU and modem – pg 16, ll. 17-25; Fig. 2C;

modem selectively connected to antennas – pg 16, ll. 26 to pg 17, ll. 7;

determines routing – pg 16, ll. 27 to pg 17, ll. 4;

dynamically varying data density as function of parameter –pg 30, ll. 13-

22; pg 13, ll. 13-15; pg 18, ll. 15-20.

Claim 77:

overlapping sectors – pg 14, ll. 24 to pg 15, ll. 6.

Claim 78:

monitoring utilization of system bandwidth – pg 36, ll. 20 to pg 37, ll. 19;

modem assigned as function of monitored bandwidth – pg 38, ll. 14-22; pg 21, ll.

3-7.

New independent Claim 79 recites the System and adds:



Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

plural hub transceivers – pg 13, ll. 4-7; Fig. 2B;

different frequencies – pg 14, ll. 24 to pg 15, ll. 6;

overlapping sectors – pg 14, ll. 24 to pg 15, ll. 6 ;

processor including CPU and modem – pg 16, ll. 17-25; Fig. 2C;

modem selectively connected to antennas – pg 16, ll. 26 to pg 17, ll. 7;

determines routing – pg 16, ll. 27 to pg 17, ll. 4;

dynamically varying data density as function of parameter –pg 30, ll. 13-22; pg 13, ll. 13-15; pg 18, ll. 15-20.

Claim 80:

monitoring utilization of system bandwidth – pg 36, ll. 20 to pg 37, ll. 19;

modem assigned as function of monitored bandwidth – pg 38, ll. 14-22; pg 21, ll. 3-7.

New independent Claim 81 recites the System and adds:

modular system – pg 5, ll. 16-24; pg 11, l. 5 to pg 12, l. 14;

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

additional node added as function of traffic requirements – pg 33, ll. 7-17; pg 12, ll. 4-5;

hub control circuit for selectively adding hub resources to communicate with nodes as function of traffic requirements – pg 18, ll. 21-25.

New independent Claim 82 recites the System and adds:

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

bursty data between computer systems – pg 9, ll. 6-12;

plural hubs – pg 9, ll. 26-28; Fig. 6;

plural hub transceivers – pg 13, ll. 4-7; Fig. 2B;

processor including CPU and modem – Fig. 2C;

determines routing – pg 16, ll. 27 to pg 17, ll. 4;

provides sync signals to nodes – pg 16, ll. 26-28; pg 32, ll. 3-10; pg 27, ll.  
7-10;

formatting TDD frames, forward and reverse portions, plural slots,  
overhead and payload portion – Fig. 3A; Fig. 3B;

dynamically varying data density – pg 41, ll. 25 to pg 43, ll. 23.

Claim 83:

nodes connected to computer networks separate from hub computer network – pg  
5, ll. 1-2;

transceiver – pg 27, ll. 1-4;

antenna highly directional toward hub – pg 26, ll. 25-28;

processor including CPU and modem – Fig. 4;

varying forward/reverse ratio as function of hub signals – pg 32, ll.  
3-10;.

New independent Claim 84 recites the System and adds:

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

short distance – pg 11, ll. 1-2;

bursty data between computer systems – pg 9, ll. 6-12;

plural hub transceivers – pg 13, ll. 4-7; Fig. 2B;

processor including CPU and modem – Fig. 2C;

determines routing – pg 16, ll. 27 to pg 17, ll. 4;

monitoring utilization of system bandwidth – pg 36, ll. 20 to pg 37, ll. 19;

modem assigned as function of monitored bandwidth – pg 38, ll. 14-22; pg 21, ll. 3-7.

provides sync signals to nodes – pg 16, ll. 26-28; pg 32, ll. 3-10;

nodes connected to computer networks separate from hub computer network – pg 5, ll. 1-2;

transceiver – pg 27, ll. 1-4;

antenna highly directional toward hub – pg 26, ll. 25-28;

processor including CPU and modem – Fig. 4;

varying forward/reverse ratio as function of hub signals – pg 32, ll. 3-10;.

Claim 85:

routing data at hub as function of content of data received – pg 26, ll. 4-6;

New independent Claim 86 recites the System and adds:

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

short distance – pg 11, ll. 1-2;

bursty data between computer systems – pg 9, ll. 6-12;

plural hub transceivers – pg 13, ll. 4-7; Fig. 2B;

processor including CPU and modem – Fig. 2C;

formatting TDD frames, forward and reverse portions, plural slots,

overhead and payload portion – pg 41, l. 25 to pg 43, l. 23; Fig. 3A; Fig.

3B;

monitoring utilization of system bandwidth – pg 36, ll. 20 to pg 37, ll. 19;

modem assigned as function of monitored bandwidth – pg 38, ll. 14-22; pg

21, ll. 3-7;

provides sync signals to nodes – pg 16, ll. 26-28; pg 32, ll. 3-10.

Claim 87:

number of cells per slot dynamically variable – pg 32, ll. 1-10; pg 33, ll. 13-17; pg 40, ll. 22-25.

Claim 88:

number of cells per slot is statistically determined – pg 37, ll. 3-6; pg 38, ll. 14-22.

New independent Claim 89 recites the System and adds:

Adaptive Time Division Duplexing (“ATDD”) – pg 41, ll. 23-27;

short distance – pg 11, ll. 1-2;

bursty data between computer systems – pg 9, ll. 6-12;

plural hubs – pg 9, ll. 26-28; Fig. 6;

plural hub transceivers – pg 13, ll. 4-7; Fig. 2B;

processor including CPU and modem – Fig. 2C;

determines routing – pg 16, ll. 27 to pg 17, ll. 4;

nodes connected to computer networks separate from hub computer network – pg 5, ll. 1-2;

hub processor providing synch signal – pg 9, ll. 26 to pg 10, ll. 10' pg 39, ll. 14-16;

overlapping sector antennas – pg 14, ll. 17 to pg 15, ll. 5.

Claim 90:

routing data at hub as function of content of data received – pg 26, ll. 1-15.

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